

## Exploring the moderating roles of perceived person-job fit and person-organization fit on the relationship between training investment and knowledge workers' turnover intentions

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### **Abstract:**

Previous studies have documented inconsistent results in terms of the relationship between knowledge workers' perceived training investment and their turnover intentions. In order to clarify the inconsistencies, the present study extends previous research by exploring the moderating roles of perceived demand-ability (D-A) job fit and person-organisation (P-O) fit. Data were collected from 303 research and development (R&D) engineers from 30 high-technology firms in Taiwan. Hierarchical regression analyses were conducted to test the hypotheses. The results show that perceived D-A fit, P-O fit, and perceived training investment interact jointly to predict knowledge workers' turnover intentions. Specifically, while the main effect of perceived training investment on turnover intentions was negative, under situations of extremely high perceived D-A fit and extremely low P-O fit, the relationship between knowledge workers' perceived training investment and their turnover intentions became positive, and under situations of low perceived D-A fit and high P-O fit, the relationship between knowledge workers' perceived training investment and their turnover intentions remained negative. Theoretical and practical implications are also discussed.

Les études antérieures ont donné des résultats contradictoires quant aux relations entre la connaissance que les salariés perçoivent de l'investissement dans la formation et leurs intentions de changer. Dans le but de clarifier ces incohérences, la présente étude prend la suite de recherches antérieures en explorant les rôles modérateurs de la compatibilité perçue entre la compétence et les nécessités au travail (DA) et de la compatibilité entre la personne prise dans sa globalité et les caractéristiques de l'organisation qui l'emploie (PO). Les données ont été collectées auprès de 303 ingénieurs en recherche et développement (R&D) de 30 entreprises de

haute technologie à Taiwan. Des analyses de régression hiérarchique ont conduit à tester les hypothèses. Les résultats montrent que la compatibilité D-A, la compatibilité P-O et l'investissement perçu dans la formation interagissent conjointement pour prédire les intentions de changement des employés. Plus spécifiquement, alors que le principal effet de l'investissement perçu dans la formation sur les intentions de changement est négatif, dans des conditions de compatibilité D-A perçue comme étant basse et de compatibilité P-O haute, la relation entre la connaissance que les salariés perçoivent de l'investissement dans la formation et leurs intentions de changement reste négative. Les implications théoriques et pratiques sont aussi discutées.

**Keywords:** turnover intention | knowledge workers | training investment | organisational fit

**Article:**

## INTRODUCTION

In the present era, which emphasises the need for change, creativity, and innovation in organisations, firms rely heavily on knowledge workers to achieve competitive advantage (Micklethwait & Wooldridge, 1996). Further, knowledge workers effectively generate useful ideas and create brand-new products, providing firms with strong impetus to retain them (Lee & Maurer, 1997). This is particularly true in high-technology firms, as these types of firms are associated with high percentages of knowledge workers, such as engineers and scientists (Baruch, 1997; Rousseau & Shperling, 2003). Given that knowledge workers identify strongly with their professions, and that knowledge work requires continuous learning (Benson, Finegold, & Mohrman, 2004), knowledge workers typically search for organisations that facilitate training and skill-development opportunities (Freidson, 1994; Von Glinow, 1988). Therefore, the degree to which knowledge workers perceive that their organisations offer the necessary training investment heavily influences their intentions in terms of remaining or moving on (Lee & Bruvold, 2003; Noe, 2005).

*Perceived organisational training investment* is defined as employees' global beliefs concerning the extent to which "their organisations' commitment to help employees learn and obtain new skills/competencies that will allow them to meet job requirements or move to new positions" (Lee & Bruvold, 2003, p. 983). Although it is believed that perceptions associated with organisational training investment can reduce employee turnover intentions (Kalleberg & Rognes, 2000; Noe, 2005), studies that have examined this relationship have reached an interesting crossroads. On the one hand, various researchers have found that employees' perceived organisational training investment reduced employee turnover intentions (Allen, Shore, & Griffeth, 2003; Meyer & Smith, 2000; Wayne, Shore, & Liden, 1997), while other researchers, including Lee and Bruvold (2003) and Burke, Burgess, and Fallon (2006), have indicated that perceived organisational training investment is unrelated to employee turnover intentions. Moreover, Acton and Golden's (2003) study of 200 IT engineers from 39 software companies found that IT engineers who perceived a high level of organisational training investment *did not* remain with their firm for long periods of time. Furthermore, Benson (2006) and Benson et al. (2004) suggest that organisational training investment enhances the turnover of technological engineers under certain situations. These inconsistent results suggest that the

relationship between knowledge workers' perceived training investment and their turnover intentions may depend on some undetected moderators.

The present study is designed to clarify the boundary conditions of the perceived organisational training investment–turnover intentions linkage. Based on the unfolding model of voluntary turnover (see Lee & Mitchell, 1994), Lee and Maurer (1997) and Wheeler, Buckley, Halbesleben, Brouer, and Ferris (2005) propose several decision paths that knowledge workers might take during the turnover process. The major components of the unfolding model include a shock (i.e. unexpected event) and amount of psychological judgments that precede the turnover action (Holtom, Mitchell, Lee, & Inderrieden, 2005). These psychological analyses include comparing unplanned events to their image (i.e. individual values, goals, and plans) and reassessing *their fit with the current organisation or job* (Wheeler et al., 2005; Wheeler, Gallagher, Brouer, & Sablinski, 2007). In addition, the *perceived fit or misfit with the current organisation or job* will lead knowledge workers to take different actions within the turnover process. The effects of organisational training investment on the retention of knowledge workers differ under different decision paths (Lee & Maurer, 1997; Wheeler et al., 2005). Following this line of reasoning, there is evidence to suggest that the *perceived person–organisation (P–O) fit* and *person–job (P–J) fit* associated with knowledge workers could act as moderators for the perceived training investment–turnover intentions linkage.

Management scholars have consistently found that the perceived P–O fit and P–J fit are particularly relevant to turnover decisions (e.g. Cable & DeRue, 2002; Lauver & Kristof-Brown, 2001; Saks & Ashforth, 1997), and this also holds true for knowledge workers (Furnham, 2001). P–O fit is defined as the compatibility between people and organisations where: (a) at least one entity provides what the other needs (complementary fit), (b) they share similar fundamental characteristics (supplementary fit), or (c) both (Kristof, 1996, pp. 4–5). P–J fit reflects the match between employees' personal characteristics and job attributes, and takes two distinct forms: demand–ability (D–A) fit and need–supply (N–S) fit (Cable & DeRue, 2002). D–A fit refers to the level of compatibility between employees' knowledge, skills, abilities (KSAs) and their job demands, while N–S fit reflects the extent to which a job's attributes and rewards fulfill employees' psychological needs or preferences (Cable & DeRue, 2002).<sup>1</sup> Following Cable and Edwards (2004), we treat both D–A fit and N–S fit as a complementary fit (i.e. meeting the job requirement and psychological need fulfillment), while for P–O fit, we treat it as a supplementary fit (i.e. value congruence). Further, P–J and P–O fit are interdependent constructs and influence employees' work attitudes in unique ways (Cable & Edwards, 2004; Erdogan & Bauer, 2005). Employees can perceive a good match between their job and themselves, yet not share in the organisational values or vice versa (Lauver & Kristof-Brown, 2001; Resick, Baltes, & Shantz, 2007). As such, under different levels of P–J and P–O fit perceptions, organisational training investment may help employees to improve their KSAs in such a way that they choose

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<sup>1</sup> As Cable and DeRue (2002) suggested, D–A job fit and N–S job fit are distinct constructs and have different effects on employees' intentions and attitudes. Similarly, Resick, Baltes, and Shantz (2007) also argued that the interaction between D–A job fit and P–O fit is important for employees' employment intentions (e.g. turnover intentions), while the interaction between N–S job fit and P–O fit is important for work-related attitudes (e.g. job satisfaction). Following their suggestions, we focus on the D–A job fit because it is more relevant to our theoretical argument (voluntary turnover literature) and outcome variables (i.e. turnover intentions). As for the N–S job fit, we add it as a control variable in our analysis.

to stay with the organisation, or facilitate their mobility outside of their current organisation (Kristof-Brown, Zimmerman, & Johnson, 2005; Wheeler et al., 2005).<sup>2</sup>

The present study aims to extend the existing literature on turnover and fit in several ways. First, employing the lens of the unfolding model and the misfit model (Lee & Maurer, 1997; Wheeler et al., 2005), we seek to identify the circumstances under which perceived organisational training investment reduces turnover intentions. As such, we provide insights on whether investing in knowledge workers' training reduces their turnover intentions (Benson, 2006; Benson et al., 2004; Lee & Maurer, 1997). Second, past fit studies were predominantly restricted to examinations of the main effects of fit perceptions (e.g. Cable & DeRue, 2002; Lauver & Kristof-Brown, 2001). However, recent researchers have shifted their focus to the interactive effects of multiple fit perceptions on work attitudes (e.g. Erdogan & Bauer, 2005; Kristof-Brown, Jansen, & Colbert, 2002; Resick et al., 2007). In this study, we attempt to investigate how the perceived D–A fit and P–O fit jointly interact with perceived training investment to influence knowledge workers' turnover intentions in a direct response to previous calls for further clarifications in this area (Jansen & Kristof-Brown, 2006; Kristof-Brown et al., 2005). Finally, it is widely accepted that knowledge workers significantly contribute to organisational success and innovation (Lee & Maurer, 1997; Rousseau & Shperling, 2003), and this is particularly true for high-technology firms in Taiwan (see Chen, Chang, & Yeh, 2003; Chen, Ko, & Lawler, 2003; Huang, 2000), where this study took place. For these reasons, our findings serve as relevant insights for practitioners in terms of effectively retaining their valuable knowledge workers.

## **THEORY AND HYPOTHESES**

Organisations can provide knowledge workers with a variety of channels for training and developing their KSAs (Noe, 2005). These training practices signal that organisations are supportive and are seeking to establish a long-term relationship with knowledge workers (Allen et al., 2003). Thus, knowledge workers' perception of organisational training investment should reduce their turnover intentions (Ng, Butts, Vandenberg, DeJoy, & Wilson, 2006; Noe, 2005). However, it is also possible that knowledge workers' acquisition of KSAs, through organisational training investment, actually facilitate their mobility within the labor market (Benson, 2006; Benson et al., 2004; Zardkoohi & Paetzold, 2004). The arguments discussed above indicate that a boundary condition pertaining to the relationship between training investment and knowledge workers' turnover intentions may exist. The present study answers

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<sup>2</sup> Both P–O fit and P–J fit can be further categorized into three types of fit: (a) perceived fit (when an individual make a direct judgment of the compatibility between P and O/J); (b) subjective fit (when fit is assessed indirectly through the comparison of P and O/J reported by the same person); and (c) objective fit (when fit is calculated indirectly through the comparison of P and O/J as reported by different sources; Kristof-Brown et al., 2005). In the present study, we focus on knowledge workers' perceived P–O fit and P–J fit for two reasons. First, past studies have consistently found that perceived fit generates stronger relationships in terms of employee attitudes than other types of fit (Kristof-Brown et al., 2005; Verquer, Beehr, & Wagner, 2003); second, although the direct measure of perceived fit is more susceptible to common method variance bias than other types of fit, it also gives a better way of capturing employees' experienced environments (Kristof-Brown et al., 2005). As such, it will be more beneficial to examine how knowledge workers' perceived P–O and P–J fit interact jointly on the training investment–turnover intention linkage.

the aforementioned question by exploring the moderating roles of perceived D–A and P–O fit on the training investment–turnover intentions linkage.

According to the unfolding model (Lee & Mitchell, 1994), employees initiate a series of psychological analyses and fit judgments (e.g. perceived fit with the organisation and the job) after experiencing unplanned events. These judgments in turn cause employees to take various decision paths that may precede the actual turnover process. Therefore, we argue that under different levels of perceived D–A and P–O fit, knowledge workers take divergent decision paths as they consider their available courses of action. Furthermore, we also argue that the effects of perceived training investment on turnover intentions differ under different decision paths. These arguments are further elaborated on below.

Based on the unfolding model, Lee and Maurer (1997) proposed four decision paths via which knowledge workers might leave their organisations; they also discussed how managers can use human resource practices, such as investment in training, to retain knowledge workers along each decision path. In *path 1*, a shock triggers the enactment of a pre-existing action plan. If the shock matches the action plan, employees leave without making fit judgments and without considering job alternatives. *Path 2* describes how a shock causes employees to reassess their fit with the organisation in terms of evaluating the compatibility between the shock and their image; if a shock leads to a judgment of misfit, employees often leave *without* searching for job alternatives. However, as Lee, Mitchell, Wise, and Fireman (1996) and Lee, Mitchell, Holtom, McDaniel, and Hill (1999) suggest, path 1 and path 2 are least frequently observed<sup>3</sup> in the cases of knowledge workers such as nurses and accountants (Drucker, 2002). Therefore, in the present study, we focus only on decision paths 3 and 4. In *path 3*, a shock prompts the reassessment of employee fit with the organisation. The difference between path 3 and path 2 is that employees in path 3 may possess *one or more* job alternatives (i.e. high perceived marketability or job mobility), while employees in path 2 may not have any job alternatives at hand. In such circumstances, employees choose to stay only if the current organisation better meets their preferences (i.e. high perceived P–O fit). However, when employees perceive a misfit with the organisation or competing organisations fit their image or preferences better (i.e. low perceived P–O fit), then they are highly likely to choose to leave (Wheeler et al., 2007).

In the case of knowledge workers, a high level of D–A fit indicates that they possess sufficient KSAs to perform their job and to meet professional requirements, which in turn leads to higher job performance (Cable & DeRue, 2002). However, as Jackofsky (1984) argues, high performers enjoy the benefit of having numerous actual or perceived alternative job offers and high ease of movement. Thus, when high performers are not attracted to their current organisation, they are more likely to leave. In addition, Trevor, Gerhart, and Boudreau (1997) also found that turnover was higher for high performers than it was for average performers, supporting the above argument. Following in this vein, a good D–A fit should increase knowledge workers' job performance, which in turn enhances their "movement capital" in terms of good ability or skills (Jackofsky & Peters, 1983; Trevor, 2001) and may make them more marketable within the job

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<sup>3</sup> Lee et al. (1996) found that only 14 per cent of nurses followed decision path 1, and an additional 14 per cent were judged to follow decision path 2, respectively. For Lee et al.'s (1999) study, only 3 per cent of accountants followed decision path 1, and a further 3 per cent of accountants were classified into decision path 2. Thus, we discuss only decision path 3 and path 4 in this study.

market (e.g. high marketability; Bretz, Boudreau, & Judge, 1994). Thus, knowledge workers with a high D–A fit but a low P–O fit are more likely to consider leaving their current organisation than those with high levels of D–A fit and P–O fit.

Similarly, on the basis of the unfolding model, Wheeler et al. (2005) proposed a misfit model that discusses the outcomes of employee misfit perceptions, including “adaptation” or “exit”. If employees perceive that they fit well with their current job and organisation, they will stay with the current organisation. However, when there is a misfit (e.g. a low level of P–O fit), employees will assess whether they want to adapt themselves to fit with the organisation. If adaptation is determined to be unfeasible, they begin to assess all available outside alternatives (i.e. exit). Further, since values are *relatively* enduring and stable across time/work situations for most employees, it is *relatively* difficult to change their values to fit the organisation in the short term (Wheeler et al., 2005).<sup>4</sup> Thus, when employees perceive their ability to be compatible with their job requirements but perceive their values as incongruent with those of the organisation, they tend to deal with the misfit by choosing to “exit”. This is particularly applicable to knowledge workers, since they continuously seek optimal organisations in which they can utilise and develop their expertise (Von Glinow, 1988).

Amalgamating the above arguments, we find that knowledge workers who find a better fit with their jobs and organisations tend to remain with those organisations. From the organisational perspective, to retain these types of workers, Lee and Maurer (1997) suggested that organisational training investment can serve to further enhance the perceived advantages associated with remaining at their present firms. Thus, knowledge workers with high levels of D–A fit and P–O fit are more likely to stay when they perceive a high level of organisational training investment. On the other hand, knowledge workers with a good D–A fit but a poor P–O fit are likely to consider leaving their current organisations and searching for alternatives. Still, under this type of situation (high perceived D–A fit and low P–O fit), even knowledge workers who perceive a high level of organisational training investment are unlikely to increase their P–O fit through training investment *in the short run*. Moreover, when employees have a good D–A fit and a low P–O fit, organisational training investment further facilitates knowledge workers’ acquisition of additional knowledge and skills, and increases their chance of external mobility (Benson, 2006; Benson et al., 2004; Bretz et al., 1994; Zardkoohi & Paetzold, 2004). Therefore, we expect that knowledge workers’ perceived training investment should be positively related to their turnover intentions, insofar as they are liable to search for another organisation to utilise their KSAs. Hence, the following is proposed:

*Hypothesis 1a:* For individuals with high perceived D–A job fit, perceived P–O fit interacts with perceived training investment in relation to turnover intentions such that perceived training investment is negatively related to turnover intentions for individuals with high perceived P–O fit and positively related to turnover intentions for individuals with low perceived P–O fit.

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<sup>4</sup> Some researchers indicate that individuals can change their values/preferences to be more congruent with the culture of the organization they work for *in the long term* (e.g. Cable & Parsons, 2001; Cooper-Thomas, van Vianen, & Anderson, 2004; Roberts & Robins, 2004). In this study, we argue that employees find it *relatively* difficult to change their values to fit the organization *in the short term*. Thus, our argument remains compatible with the findings of Cable and Parsons (2001), Cooper-Thomas et al. (2004), and Roberts and Robins (2004).

Finally, for *path 4*, no shock occurs. Gradually, some employees come to feel that they no longer fit their job or organisation (i.e. low levels of perceived D–A fit and P–O fit), which can lead to individuals quitting even *without* suitable job alternatives. These employees are said to follow *path 4a* (Lee & Maurer, 1997). Other employees who perceive a misfit with *their job* may engage in the turnover process that follows traditional turnover theories (e.g. Mobley, 1977). These employees encounter image evaluation (e.g. the judgment of P–O fit), job dissatisfaction, job search, and evaluation of alternatives (Lee & Mitchell, 1994) and are said to follow *path 4b*. Both path 4a and path 4b can result in knowledge workers' misfit perceptions (e.g. a low D–A fit perception), which in turn cause them to reconsider whether they are willing to adapt themselves to fit the job or organisation. If the adaptation is workable, then they generally choose to adapt (Wheeler et al., 2005).

For knowledge workers who perceive a misfit with their job (i.e. a poor D–A fit) but have a good P–O fit perception, it is likely that their KSAs are not compatible with the job requirements even though their values are congruent with the organisational culture. This will force knowledge workers to consider the current organisation as attractive, and they often choose to employ “adaptation” as the way to deal with their misfit. In this situation, knowledge workers who perceive that their organisation provides the necessary training investment are more likely to stay since they are willing to increase their D–A fit in order to stay with the organisation (Furnham, 2001; Kristof-Brown et al., 2005).

Nevertheless, when knowledge workers have low levels of D–A fit and P–O fit perceptions, they may choose to leave their organisation following decision path 4a. Although organisational training investment is useful in terms of improving knowledge workers' KSAs and increasing their fit with their job (Lee & Maurer, 1997), it is *relatively* difficult for them to change their P–O fit *in the short run* (Wheeler et al., 2005). Therefore, the current firm becomes less attractive to these workers and they become less inclined to adapt themselves to stay. Thus, for these employees, the negative effect of the perceived training investment on turnover intentions should prove to be less pronounced than for those who have a poor D–A fit but a good P–O fit. Taking this into account, we propose:

*Hypothesis 1b:* For individuals with low perceived D–A job fit, perceived P–O fit interacts with perceived training investment in relation to turnover intentions such that perceived training investment is negatively related to turnover intentions for individuals with high perceived P–O fit and this relationship will be attenuated for individuals with low perceived P–O fit.

## **METHOD**

### **Sample**

Three hundred and three R&D engineers from 30 high-technology firms in Taiwan were selected to participate in this study. To ascertain whether the sample firms were consistent with the characteristics of high-technology firms (see Baruch, 1997; Smith, Collins, & Clark, 2005), we ensured that these firms emphasised invention and innovation in their business strategies,

deployed a significant percentage of their financial resources to R&D, and employed a relatively high percentage of scientists and engineers in their workforce.<sup>5</sup> Sample firms showed a large variation in terms of size (mean = 3,970,  $SD = 6,160$  [employees], sales (mean = 1,763,  $SD = 3,473$  [millions of New Taiwan Dollars, NTD]), and R&D expenditure (mean = 49,  $SD = 84$  [millions of NTD]).

We contacted the top management of sample firms to ascertain their willingness to participate. Considering top management's willingness to support this study and that the average number of R&D engineers employed in sample firms was high (mean = 103.03,  $SD = 36.5$ ), we decided to send 10 to 20 (mean = 15) questionnaires to each firm according to the number of R&D engineers they employed. After each firm's top management agreed to participate in and support this study, we sent questionnaires to the HR department who distributed them to the R&D engineers. Furthermore, we asked the HR personnel to ensure that the participants were representative of the larger sample of R&D engineers employed in their firm in terms of demographic composition.

Each questionnaire included a cover letter explaining the purpose of the study and emphasising that all responses would be kept anonymous and confidential, to avoid problems related to social desirability (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The completed surveys were returned directly by mail to the researchers. A total of 450 questionnaires were distributed and 303 valid responses obtained (a valid response rate of 67%). Participants were predominantly male (81%), within the 20–30-year-old band (56%; mean = 31.09), and had obtained a university or graduate degree (83%). In terms of tenure, 66 per cent of the respondents had less than five years with their organisation (mean = 4.09 years), and 62 per cent had less than five years in their current occupation (mean = 4.41 years).

## Measures

### *Perceived Organisational Training Investment.*

To measure employees' perceptions of organisational training investment, we used the 12 indicators developed by Investors in People (IIP) in the UK (2002). IIP is a national and international standard that provides measures for organisations to assess how employees perceive organisational investment in terms of training and development (Murphy & Bevan, 2002). Employees were asked to evaluate their perceptions of each item. Sample items included: "The organisation is committed to ensuring equality of opportunity in the development of its employees", "The organisation is committed to supporting the development of its employees", and "Employees learn and develop effectively in the current organisation". Responses were made on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). The Cronbach's alpha for this scale was .93.

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<sup>5</sup> We reviewed the 30 firms' business strategies and the percentage of scientists and engineers in their workforce (mean = 22,  $SD = 8$  [in per cent]) based on information obtained from annual reports downloaded from company websites. In addition, we collected R&D-to-sales ratio data (mean = 6.6,  $SD = 9$  [in per cent]) from the *Taiwan Economic Journal* database (a database that reports annually on Taiwanese firms' financial data).



In order to confirm the factor structure of the IIP measure, we conducted a confirmatory factor analysis (CFA) with all 12 items loaded on a single factor. The CFA results showed that the one-factor model fit the data very well ( $\chi^2 [54] = 64.94$ ,  $\chi^2/df = 1.20$ ; RMSEA = .03, GFI = .97, AGFI = .95, NNFI = .90, CFI = .92), and that all items loaded significantly on the assigned latent construct.

Since the IIP is a relatively new measure, we provide more information about its criterion-related validity here. In order to examine the criterion-related validity of a new measure, Hinkin (1998) and Schwab (2005) suggest that the score of the new measure should be correlated to theoretically relevant variables within the nomological network. When knowledge workers perceive that their organisation provides sufficient training investment, they are likely to be satisfied with the organisation-provided training courses and likely to participate in them (Noe, 2005). Therefore, we also examined the associations between the IIP scores and the two relevant criteria (i.e. *satisfaction with the organisational training investment* and *the number of times employees have participated in organisational training courses*) from another independent sample. Participants for the independent dataset included 151 R&D engineers from 12 high-technology firms. The demographics of this dataset were very similar to those in the original dataset.

Satisfaction with organisational training investment was measured with a single item from Noe (2005) (i.e. "Overall, I was satisfied with the organisation-provided training courses"). Responses were made on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). As for the second criterion pertaining to the number of times participants had attended organisational training courses, we asked participants to report how many times they had joined organisation-provided training courses *during the past year* (measured in numbers; mean = 4.23,  $SD = 3.81$ ). The multiple regression results show that the IIP score was positively and significantly related to both satisfaction with the organisational training investment ( $b = .62$ ,  $p < .001$ ) and training participation ( $b = .19$ ,  $p < .05$ ) after controlling for the effects of organisational size, organisational tenure, and occupational tenure. Taken together, these results showed evidence of the acceptable validity and reliability of the IIP measure.

#### *Turnover Intentions.*

To measure knowledge workers' turnover intentions, we adapted Meyer, Allen, and Smith's (1993) three-item scale (sample item: "I have frequently thought about leaving my current employer"). Responses were made on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). Cronbach's alpha for this scale was .88.

#### *Perceived D–A Fit and Perceived N–S Fit.*

In this study, we used one item from Saks and Ashforth (1997) to measure knowledge workers' perceived D–A fit (i.e. "To what extent do your knowledge, skills, and abilities match the requirements of the job?"). Further, three items from Saks and Ashforth's (1997) scale were used to measure knowledge workers' perceived N–S fit (i.e. "To what extent does the job fulfill your needs?", "To what extent does the job enable you to do the kind of work you want to do?", and "To what extent is the job a good match for you?"). Responses were made on a 5-point Likert

scale (1 = *to a very little extent*, 5 = *to a very large extent*). Cronbach's alpha for this scale was .84.

In order to determine the convergent and the discriminant validity of our perceived D–A fit and N–S fit measures, we collected the perceived D–A and N–S fit data using Cable and DeRue's (2002) scale from an independent sample (which is identical to the one used for validation of the IIP measure). The results of the correlation analyses show that our D–A fit scale was more strongly and positively correlated to Cable and DeRue's (2002) D–A fit scale than their N–S fit scale ( $r = .61$  and  $.32$ , all  $ps < .01$ ). Moreover, the three-item N–S fit scale was more strongly and positively correlated to Cable and DeRue's (2002) N–S fit scale than their D–A fit scale ( $r = .75$  and  $.46$ , all  $ps < .01$ ). To sum up, these findings support the convergent and discriminant validity between our measures and other available measures.

#### *Perceived Person–Organisation Fit.*

We also employed Saks and Ashforth's (1997) scale to measure perceived P–O fit. Respondents were asked to evaluate their P–O fit perceptions according to four items (sample items: "To what extent are the values of the organisation similar to your own values?" and "To what extent is the organisation a good match for you?"). Responses were also made on a 5-point Likert scale (1 = *to a very little extent*, 5 = *to a very large extent*). Cronbach's alpha for this scale was .82.

#### *Control Variables.*

According to the meta-analysis conducted by Griffeth, Hom, and Gaertner (2000), employees' age, organisational tenure, and occupational tenure may influence their turnover decisions. Kristof-Brown et al. (2002) also argued that the occupational experiences and the length of time working for a single organisation could influence the effects of P–O fit and P–J fit. Hence we added *age*, *organisational tenure*, and *occupational tenure* as control variables (all measured in years). Finally, as our hypotheses were mainly derived from the D–A form of person–job fit, we added the *perceived N–S fit* as a control variable.

#### *Translation of Measures.*

The original versions of the measures were translated into Chinese by the authors and then back-translated by two bilingual foreign language experts. Each expert back-translated all items independently.<sup>6</sup> Finally, the translation was reviewed for appropriateness by five organisational behavior experts in order to ensure the content validity of the instruments (Brislin, 1980).

#### *Confirmatory Factor Analyses.*

To evaluate the discriminant and convergent validity of our measures, we conducted CFA using LISREL 8.54. Using the maximum likelihood estimation, we estimated the fit indices of our

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<sup>6</sup> Following Brislin (1980), when experts' encountered disagreement during back-translations, we first reviewed whether the items were inappropriately translated and then retranslated these items into Chinese again. Then, the translated items were independently back-translated by two experts again. This process was repeated until a consensus on back-translation was achieved.

measurement model. The CFA results show that the hypothesised five-factor model (i.e. perceived D–A fit, perceived N–S fit, perceived P–O fit, perceived organisational training investment, and turnover intentions) fit the data better (CFI = .93, NFI = .92, NNFI = .92, SRMR = .07) than the four-factor model (i.e. perceived P–J fit [items of D–A and N–S fit loaded on the same factor], perceived P–O fit, perceived organisational training investment, and turnover intentions; CFI = .89, NFI = .88, NNFI = .88, SRMR = .10). Chi-square tests showed that the  $\chi^2$  decrement between the hypothesised five-factor model and the four-factor model was statistically significant ( $\Delta\chi^2 = 66$ ,  $\Delta df = 3$ ), which indicated that the perceived P–J fit should be treated as two separate aspects: D–A fit and N–S fit.

Moreover, we also found that the fit indices of the hypothesised five-factor model fit the data better than the one-factor model (i.e. all items are loaded on a single factor; CFI = .80, NFI = .78, NNFI = .79; SRMR = .13). These CFA results demonstrate the distinctiveness of the five constructs measured in this study. Moreover, the factor loadings of all items in the five-factor model were statistically significant ( $p < .01$ ), suggesting that the convergent validity of all measures was acceptable (Bagozzi, Yi, & Phillips, 1991).

## Data Analysis

We conducted hierarchical regression analyses to test our hypotheses (Cohen, Cohen, West, & Aiken, 2003). In order to reduce problems associated with multi-collinearity, all variables used to construct the interaction terms were centered by subtracting the mean of each variable from the observed values (Aiken & West, 1991). As for the multi-collinearity check, the variance inflation factor (VIF) scores were calculated for the independent variables in each of the regression models and were then reviewed to ensure that all the VIF scores were below 10.0 (Hair, Anderson, Tatham, & Black, 1995).

## RESULTS

Table 1 presents the means, standard deviations, reliabilities, and correlations of the study variables. As can be seen in Table 1, all variables were negatively related to turnover intentions ( $r = -.16$  to  $-.54$ , all  $ps < .01$ ).

## Hypothesis Testing

We proposed that knowledge workers' perceived D–A fit and P–O fit would jointly interact with perceived training investment to influence their turnover intentions. By using turnover intentions as the dependent variable, we entered the control variables in step 1 (i.e. age, organisational and occupational tenure, and N–S fit), and then added perceived organisational training investment, D–A fit, and P–O fit in step 2. In step 3, we entered three two-way interaction terms, and the three-way interaction term was added in the final step.

The results of the hierarchical regression analysis are presented in Table 2. Model 2 shows that the perceived organisational training investment was negatively related to turnover intentions ( $\beta = -.33$ ,  $p < .01$ ) and perceived D–A fit was positively related to turnover intentions ( $\beta = .21$ ,  $p < .01$ ). However, perceived P–O fit was unrelated to turnover intentions. Further, the coefficient of

the three-way interaction term was negatively and significantly related to turnover intentions ( $\beta = -.19, p < .01$ ) in Model 4, and the incremental variance explained by the three-way interaction term was also statistically significant ( $\Delta R^2 = .02, p < .05$ ).

In order to examine the nature of the three-way interaction, we followed the procedure suggested by Aiken and West (1991) to specify the interplay between perceived D–A fit, P–O fit, and perceived organisational training investment (see Figure 1).

We plotted two graphs (Figure 1) to represent the interaction between perceived D–A fit, P–O fit, and perceived organisational training investment on turnover intentions. Graph A (Figure 1) shows that when employees perceived a high D–A fit (1 standard deviation above the mean) and a high P–O fit (1 standard deviation below the mean), perceived organisational training investment was strongly and negatively related to turnover intentions, which was consistent with our hypothesis. However, the relationship between perceived training investment and turnover intentions remained negative when knowledge workers perceived a high D–A fit but a low P–O fit. Thus, Hypothesis 1a was only partially supported.

Although the pattern was not perfectly consistent with Hypothesis 1a, we also found that the slope of the training investment–turnover intentions relationship at a high D–A fit and a low P–O fit was flatter than the relationship at a high D–A fit and a high P–O fit. The results of the slope comparisons (see Dawson & Richter, 2006) also showed that the slope for a high D–A fit and low P–O fit significantly differed from the slope for a high D–A fit and high P–O fit ( $t[291] = -2.02, p < .05$ ). This indicates that the negative relationship between training investment and turnover intentions weakened in the situation of high D–A fit and low P–O fit, which was congruent with our expectations.

However, as McClelland and Judd (1993) suggested, the presence of jointly extreme values for the two variables combined to create the interaction term may have affected the detection of interaction effects. That is, it is possible that interaction effects only exist at extreme values. In this vein, it is plausible that the expected positive relationship between knowledge workers' perceived training investment and turnover intentions occurs only when they possess an extremely high D–A fit and an extremely low P–O fit. To explore this possibility, we performed an additional analysis—we re-plotted Graph A, consisting of high perceived D–A fit and low perceived P–O fit (see Figure 2), but we used 2 standard deviations above/below the mean as the high/low values. As can be seen in Figure 2, we found that when knowledge workers had an extremely high D–A fit and extremely low P–O fit, the relationship between training investment and turnover intentions turned slightly positive.

As for Hypothesis 1b, we found that when knowledge workers perceived a low D–A fit but high P–O fit, the relationship between perceived organisational training investment and turnover intentions was negative (see Graph B in Figure 1), which fit our expectations. However, when employees perceived a low D–A fit and a low P–O fit, the negative relationship between training investment and turnover intentions became slightly but not significantly weaker than that for employees with a low D–A fit but a high P–O fit ( $t[291] = -1.22, p > .10$ ). On this basis, Hypothesis 1b was partially supported.

**Table 1.** Means, Standard Deviations, Reliabilities, and Correlations among Variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Age	31.09	5.38	—							
2. Organisational tenure	4.09	4.07	.69**	—						
3. Occupational tenure	4.41	3.94	.73**	.69**	—					
4. Perceived organisational training investment	4.78	.98	.15*	.09	.10	<b>.93</b>				
5. Perceived P–O fit	3.32	.67	.20**	.17**	.18**	.58**	<b>.82</b>			
6. Perceived D–A fit	3.77	.79	.20**	.19**	.23**	.36**	.37**	—		
7. Perceived N–S fit	3.51	.69	.22**	.23**	.19**	.59**	.55**	.51**	<b>.84</b>	
8. Turnover intention	2.45	.83	-.19**	-.19**	-.18**	-.51**	-.38**	-.16**	-.54**	<b>.88</b>

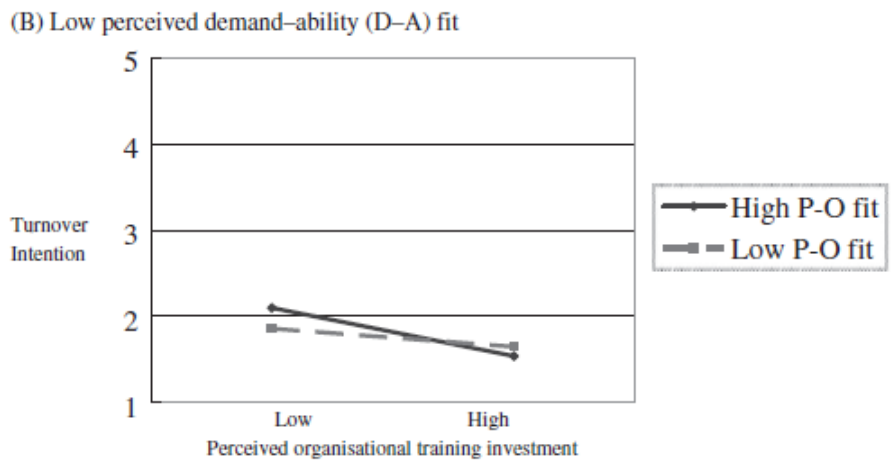
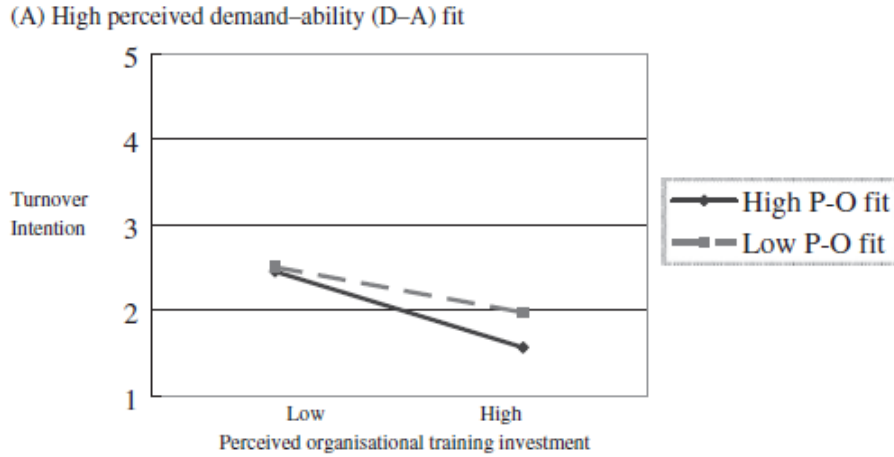
Note: (1) \*  $p < .05$ ; \*\*  $p < .01$  (two-tailed);  $N = 303$ . (2) Cronbach's alpha coefficients are presented in boldface on the diagonal.

**Table 2.** Results of Hierarchical Regression Analyses

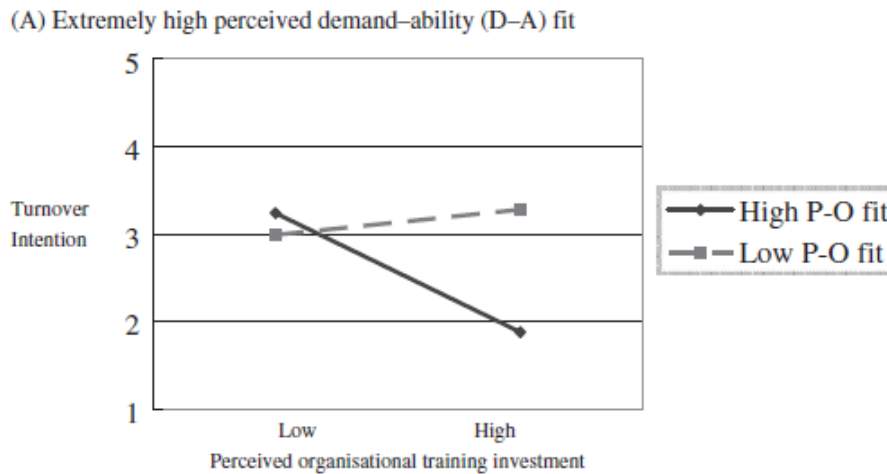
Variables	Turnover intention			
	Model 1	Model 2	Model 3	Model 4
Step 1				
Age	-.01	.03	.03	.03
Organisational tenure	-.08	-.09	-.07	-.07
Occupational tenure	-.02	-.07	-.07	-.07
Perceived N–S fit	-.52**	-.42**	-.43**	-.42**
Step 2				
Perceived organisational training investment (OTI)		-.33**	-.34**	-.32**
Perceived D–A fit		.21**	.19**	.21**
Perceived P–O fit		-.01	-.03	-.02
Step 3				
D–A fit*P–O fit			-.03	.06
D–A fit*OTI			-.08	-.13*
P–O fit*OTI			-.09	-.12*
Step 4				
D–A fit*P–O fit*OTI				-.19**
$\Delta R^2$ , each step	.29**	.08**	.03**	.02*
Total $R^2$	.29**	.37**	.40**	.42**
<i>F</i> values	30.87**	32.65**	20.42**	19.30**

Note: Standardised regression coefficients (b) are shown in each equation.  $N = 303$ .

†  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$  (two-tailed).



**Figure 1.** The three-way interaction between perceived demand–ability (D–A) fit, P–O fit, and organisational training investment on turnover intentions.



**Figure 2.** The three-way interaction between perceived demand–ability (D–A) fit, P–O fit, and organisational training investment on turnover intentions with a focus on extremely high perceived D–A fit (using two standard deviations to calculate the high/low values).

## Additional Analysis

Although we hypothesised a three-way interaction between D–A job fit, P–O fit, and organisational training investment on turnover intentions, it is plausible that the N–S job fit, P–O fit, and organisational training investment may have jointly interacted in terms of predicting knowledge workers' turnover intentions. Therefore, we performed an additional hierarchical regression analysis to examine this possible three-way interaction effect.

The results of the additional analysis revealed that none of the three two-way interaction terms or the three-way interaction term significantly predicted turnover intentions. We discuss this finding in greater detail in the following section.

## DISCUSSION

### Theoretical Implications for the Turnover Literature

In this study, our aim was to examine the boundary conditions of the relationship between perceived organisational training investment and turnover intentions. Based on the perspective of the unfolding model, we hypothesised and tested the three-way interaction between knowledge workers' perceived D–A fit, P–O fit, and organisational training investment on their turnover intentions.

Our findings contribute to the turnover literature in several ways. First, we found that when knowledge workers' perceived D–A fit is high while P–O fit is low, the negative relationship between perceived organisational training investment and turnover intentions is weakened. Although this finding is not exactly as predicted (i.e. a positive relationship between perceived training investment and turnover intentions), additional analysis shows that organisational training investment increases knowledge workers' turnover intentions when they possess extremely high levels of D–A fit and lower levels of P–O fit. These findings support the argument of the “misfit” model: even when employees perceive high compatibility with their job and organisations invest in training and development, the lack of P–O fit is still likely to result in turnover (e.g. Kristof, 1996; Kristof-Brown et al., 2005; Erdogan & Bauer, 2005; Wheeler et al., 2005). Additionally, this finding may also reflect the current situation in terms of knowledge workers' external mobility in Taiwan. Taiwanese high-technology firms rely heavily on stock bonus plans to attract and motivate high-performance knowledge workers, but these stock bonus plans are relatively short term (i.e. one-year) in nature because employees are allowed to immediately sell their shares upon receipt and reap the financial benefits as they wish (Han & Shen, 2007, p. 238). Thus, well-packaged stock bonus plans offered by other high-technology firms may prove especially attractive and appealing for talented knowledge workers (Cin, Han, & Smith, 2003). As a result, knowledge workers with a good D–A fit but a poor P–O fit are liable to sell their shares in their current organisation and in turn take on positions in firms that have more attractive stock bonus plans.

Second, we found that the relationship between perceived organisational training investment and turnover intentions is negative when knowledge workers possess low perceived D–A fit and high P–O fit. This suggests that organisational training investment is an effective way to retain

knowledge workers when they have a good P–O fit but their KSAs do not fit well with the job demands (Lee & Maurer, 1997). However, we also found that when knowledge workers perceive a low D–A fit and a low P–O fit, the negative relationship between training investment and turnover intentions is not significantly weaker than for employees with a low D–A fit but a high P–O fit. We offer an explanation of this unexpected finding as follows: although knowledge workers whose values and preferences do not fit with their organisational culture tend to choose “exit” as a way to deal with the misfit (Wheeler et al., 2005), their poor D–A fit may inhibit their transference from the current organisation to another one (e.g. low ease of movement and low perceived job mobility; Trevor, 2001). Thus, they may passively adapt themselves in order to stay with their present organisation (Farrell, 1983; Withey & Cooper, 1989). In this circumstance, these knowledge workers are more likely to benefit from organisational training investment, which may further reduce their intention to leave.

Finally, it is surprising that we found a positive association between perceived D–A fit and turnover intentions after controlling for the effects of perceived N–S fit, P–O fit, and organisational training investment (see Model 2 in Table 2). We also obtained a similar finding ( $\beta = .18, p < .05$ ) when we used another dataset (i.e. the dataset for cross-validation, described in the Measures section) to replicate this relationship. Although we did not explicitly hypothesise and propose this relationship, it is plausible that knowledge workers whose KSAs fit their job and professional requirements well are more likely to find job alternatives outside their organisations (Trevor, 2001), which may in turn increase their perceived job mobility and turnover intentions (Jackofsky & Peters, 1983). We hope future research can further clarify the topic in terms of *how*, *why*, and *when* this association exists.

### Theoretical Implications for the Fit Literature

Our findings also provide some insights for the fit literature. Since D–A job fit, N–S job fit, and P–O fit reflect how employees fit with different aspects of their jobs and organisations, Cable and DeRue (2002) proposed that the main effects of D–A job fit, N–S job fit, and P–O fit influence different employee outcomes (e.g. task performance, job satisfaction, or organisational commitment). In this study, we found that D–A job fit and P–O fit interact with perceived organisational training investment jointly in predicting turnover intentions. Moreover, additional analysis revealed that the three-way interaction between N–S job fit, P–O fit, and organisational training investment does not influence turnover intentions. These findings highlight an important implication for the fit literature: not only the *main effects* but also *the interactions* between D–A/P–O fit, N–S/P–O fit, and organisational training investment may have differential effects on employees’ intentions or attitudes.

Similarly, Resick et al. (2007) also found that the interplay between D–A job fit and P–O fit is important in predicting employees’ employment intentions (e.g. turnover intentions), while the interplay between N–S job fit and P–O fit is important for work-related attitudes (e.g. job satisfaction). Building on the present findings and aforementioned arguments, it is plausible that the interaction between D–A fit, P–O fit, and organisational training investment predicts employees’ task-related or employment outcomes (e.g. task performance or received job offers), while the three-way interaction between N–S fit, P–O fit, and organisational training investment affects employees’ attitudes towards their job or organisation (e.g. job satisfaction or



organisational commitment). Future researchers may consider examining whether these relationships exist.

### Practical Implications

Our findings provide some practical implications for HR managers. First, the results show that the effects of perceived training investment on turnover intentions depend on knowledge workers' perceived fit with the jobs and organisations. As such, organisations should routinely assess and monitor both employees' D–A and P–O fit through the use of an evaluation tool (e.g. Cable & DeRue, 2002) in order to reduce the occurrence of voluntary turnover (Lauver & Kristof-Brown, 2001). In particular, organisations should pay more attention to those with an extremely high D–A fit and extremely low P–O fit, since training investment may actually increase their turnover intentions. Therefore, in addition to using various tools to select employees with a high D–A fit, the congruence between job applicant values and those of the organisation should also be evaluated. To increase the knowledge workers' perceived P–O fit, HR managers should ensure that the details of the corporate culture are as explicit as possible through internal publications, executive presentations, socialisation programs, or formal training courses to assist knowledge workers to better fit organisational values (Cable & Parsons, 2001; Erdogan & Bauer, 2005).

Second, the results show that perceived organisational training investment is negatively correlated to turnover intentions when employees perceive a low D–A fit but a high P–O fit. When managers find employees whose skills fail to meet the job requirements, organisations can offer the necessary training to increase their perceived D–A fit (Noe, 2005). Finally, since these employees have passed a series of selection processes, their low D–A fit perceptions may actually be due to inappropriate job requirements. Therefore, HR managers should conduct job analyses and adjust job requirements regularly to allow knowledge workers to better utilise their KSAs (Chang, Chi, & Miao, 2007).

### Limitations and Future Research

A few limitations should be noted in relation to this study. First, in order to capture perceived organisational training investment, D–A fit, and P–O fit, all variables in this study were measured using self-reports from the same source, raising concerns regarding common method variance (CMV; Podsakoff & Organ, 1986). Therefore, we followed the procedural and statistical remedies recommended by Podsakoff et al. (2003) to address this issue. First, for the procedural remedies, we referred to suggestions made by Podsakoff et al. (2003) to emphasise that participants' responses would be kept anonymous and confidential to minimise potential problems related to social desirability, which is a major source of CMV (Podsakoff & Organ, 1986). Second, in terms of statistical remedies, after the data collection, we conducted CFA to detect the severity of CMV (see Korsgaard & Roberson, 1995). If CMV had been a significant problem, a single-factor model should have fit the data as well as the hypothesised model. However, we found that the five-factor model (i.e. perceived P–O fit, perceived D–A fit, perceived N–S fit, perceived organisational training investment, and turnover intentions) provided a better fit than the single-factor model (CFI = .93 and .80; NFI = .92 and .78; NNFI = .92 and .79, respectively). Consequently, we assert that our findings are not overly susceptible to

method effects. Finally, CMV problems may inflate the main effects (Podsakoff et al., 2003) and attenuate the true interactions, but are unlikely to create an artifactual interaction (Evans, 1985, p. 305; Glomb & Welsh, 2005). Given that the main purpose of this study was to explore the complex nature of the three-way interaction, CMV is unlikely to have been a serious problem. Taken together, these findings suggest that the issue of CMV should not have adversely or significantly influenced our findings.

Second, since we promised anonymity and confidentiality during the process of data collection, we were unable to identify names or trace the actual turnover of participants. Therefore, we could not collect actual turnover data through a follow-up survey, and causal relationships could not be inferred based on the cross-sectional design used in this study. However, from a theoretical standpoint, reverse causality inferences are less plausible for the interaction effects under study. Furthermore, the meta-analysis conducted by Griffeth et al. (2000) found a strongly positive relationship between turnover intentions and actual turnover ( $r = .45$ ; after controlling for measurement and sampling error) and they concluded that turnover intentions “remain the best predictor of actual turnover” (p. 480). Therefore, we believe that this limitation should not adversely influence our findings. Further, in order to clarify whether the interplay between knowledge workers’ perceived D–A fit, P–O fit, and organisational training investment does influence their actual turnover, we encourage future research on this topic to tackle these findings using a longitudinal design.

The third limitation relates to our choice of high-technology R&D engineers as our sample. While this approach put a constraint on the generalisability of our findings to other groups (i.e. those who are not knowledge workers), Lee and Maurer (1997) state that R&D engineers reflect the typical occupation of knowledge workers. This makes our sample particularly relevant (Sackett & Larson, 1990) to test our theoretical framework regarding knowledge worker turnover. Future research could compare our findings with a sample of non-knowledge workers to test the generalisability of the framework of this study.

To expand on the current findings, some directions are proposed for future research. First, Carr, Pearson, Vest, and Boyar (2006) argue that the roles of pre-entry P–J fit and P–O fit differ for newcomers with varying prior occupational experiences (e.g. neophyte versus veteran newcomers). Kristof-Brown et al. (2002) also suggest that under different levels of occupational experience or organisational tenure, the importance of P–O/P–J fit also differs. Thus, we expect that when employees have more occupational or organisational experience, their high fit perceptions compensate for low fit in other areas. On this basis, researchers could sample from diverse ranges of occupational/organisational tenures and examine whether the findings differ.

Second, occupational turnover intentions or actual occupational turnover could be added to our model. In a recent study, Blau (2007) suggests that a corresponding set of variables (e.g. job/occupational satisfaction), all of which affect organisational turnover, could also be used to explain occupational turnover. In addition, Chang et al. (2007) point out that a parallel set of variables for influencing organisational turnover intentions could also be transferred to affect occupational turnover intentions (i.e. organisational/occupational commitment). Following this line of investigation, the interaction between employees’ perceived D–A fit, P–O fit, and organisational training investment could be used to predict their occupational turnover intentions.

We expect that the interaction between low perceived D–A fit, high P–O fit, and high organisational training investment would lead to lower occupational turnover intentions, because training addresses the gap between employees’ KSAs and job requirements, which in turn decreases occupational turnover intentions.

Finally, given the importance of work teams in organisations, whether employees fit with their group members (i.e. person–group fit; P–G fit) also plays an important role in determining employees’ positive attitudes and performance (Anderson, Lievens, van Dam, & Ryan, 2004; Werbel & Johnson, 2001). Thus, we also suggest that future researchers add employees’ perceived P–G fit into our model and test the effects of the interplay between the three fit perceptions (e.g. P–G and P–J, P–G and P–O) on the relationship between perceived organisational training investment and turnover intentions.

In conclusion, by linking research streams pertaining to turnover and fit research, we test the boundary conditions of the training investment–turnover intentions relationships by highlighting the important roles of perceived D–A and P–O fit. Overall, our study contributes to the turnover literature by pointing out that knowledge workers’ perceived organisational training investment indeed reduces their turnover intentions, while the strength of this relationship depends on the level of perceived D–A and P–O fit. In relation to fit research, we examine the complicated interaction between knowledge workers’ perceived D–A fit, P–O fit, and perceived training investment in predicting turnover intentions.

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